AMENDMENTS TO THE DRAWINGS

A replacement formal drawing of Figure 2 is submitted concurrently herewith under a separate cover letter.

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of November 9, 2006 is respectfully requested.

By this Amendment, claims 1-4 have been cancelled, and new claims 5-8 have been added and are currently pending in the application. No new matter has been added by these amendments.

The title of the invention has been amended, and the entire specification and abstract have been reviewed and revised. Due to the number of revisions, the amendments to the specification and abstract have been incorporated into the attached substitute specification and abstract. For the Examiner's benefit, a marked-up copy of the specification and abstract indicating the changes made thereto is also enclosed. No new matter has been added by the revisions. Entry of the substitute specification is thus respectfully requested.

In order to correct an inconsistency in Fig. 2, a replacement Fig. 2 has been submitted, under separate cover, along with this amendment. In particular, reference numbers 17a and 17b on the right side of Fig. 2 have been replaced with reference numbers 17b and 17d, respectively, in order to be consistent with the description of Fig. 2 provided on page 3, line 25 to page 4, line 3 of the originally filed specification. No new matter has been added by this amendment. Entry of the replacement Fig. 2 is thus respectfully requested.

On pages 2-3 of the Office Action, the Examiner rejected claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over Bramstedt et al. (US 4,842,498) in view of Steffes (US 3,200,757), and further in view of Holtzberg et al. (US 4,458,555). However, as indicated above, claims 1-4 have been cancelled and replaced with new claims 5-8. For the reasons discussed below, it is respectfully submitted that the new claims are clearly patentable over the prior art of record.

The discussion of the invention provided below makes reference to the figures of the present application. However, these references are made only for the Examiner's benefit, and are not intended to limit the claims.

The present invention is directed to a diaphragm pump which, as shown in Fig. 1, includes a drive motor 4, an eccentric member 8 connected to a shaft 7 of the drive motor 4, a con rod 9 operatively connected to the eccentric member 8, and a rubber diaphragm 10 integrally

connected to the con rod 9. As shown in Fig. 3, the con rod 9 includes an enlarged end 9d having a plurality of outer surfaces, and an adhesive interface 23 coated between the enlarged end 9d and the rubber diaphragm 10. The con rod 9 also includes an annular groove 9c at a top one of the outer surfaces of the enlarged end 9d. As also shown in Fig. 3, the rubber diaphragm 10 is wrapped around the enlarged end 9d, and is molded about the enlarged end 9d so as to be fitted into the annular groove 9c and integrally united with each of the outer surfaces of the enlarged end 9d via the adhesive interface 23.

New independent claim 5 recites a diaphragm pump comprising a drive motor, an eccentric member connected to a shaft of the drive motor, and a con rod operatively connected to the eccentric member. Claim 5 also recites that the con rod includes an enlarged end having a plurality of outer surfaces. Claim 5 further recites that the con rod has an annular groove at a top one of the outer surfaces of the enlarged end, with the con rod being made of a polyamide resin. The diaphragm pump of claim 5 further includes a rubber diaphragm wrapped around the enlarged end, and an adhesive interface coated between the rubber diaphragm and the enlarged end of the con rod. Claim 5 further recites that the rubber diaphragm is molded about the enlarged end of the con rod so as to be fitted into the annular groove and integrally united with at least a portion of each of the outer surfaces of the enlarged end via the adhesive interface so as to be integrally connected to the con rod.

Bramstedt discloses a diaphragm compressor which, as shown in Figs. 1 and 3, includes a power source 13 connected to a power shaft 18, and a connecting rod 28 which carries a flexible diaphragm 29. The connecting rod 28 includes a diaphragm support plate 37 and a hold down plate 38. The diaphragm 29 extends between the diaphragm support plate 37 and the hold down plate 38, which are welded together through openings in the diaphragm 29. However, as noted by the Examiner on page 2 of the Office Action, Bramstedt does not disclose (1) that the con rod is made of a polyamide resin, (2) that the diaphragm is made of rubber, (3) that the diaphragm is integrally connected to the con rod, and (4) an adhesive interface between the enlarged end and the rubber diaphragm, as required by independent claim 5.

It is also noted that Bramstedt does not disclose that the *diaphragm is integrally united with at least a portion of each of the outer surfaces of the enlarged end via the adhesive interface*, as required by independent claim 5. Rather, Figs. 1 and 3 of Bramstedt only disclose

that the diaphragm 29 extends between the diaphragm support plate 37 and the hold down plate 38, and does not disclose that the diaphragm is integrally united with the surfaces between the support plate 37 and the hold down plate 38, and does not disclose an adhesive interface between the diaphragm and the support plate 37 or the hold down plate 38. In this regard, it is noted that it is unclear which feature of Bramstedt the Examiner is interpreting to correspond to the enlarged end of the present invention, because the Examiner only states that the enlarged end is "in the general area of reference character 37" in Bramstedt. Nonetheless, Bramstedt does not disclose that the diaphragm 29 is integrally united with the side surfaces or bottom surface of the diaphragm support plate 37, or that the diaphragm 29 is integrally united with the side surfaces and top surface of the hold down plate 38. Therefore, Bramstedt does not disclose that the diaphragm is integrally united with at least a portion of each of the outer surfaces of the enlarged end, because Bramstedt does not disclose the diaphragm being integrally united with any surface, and because several of the outer surfaces of the support plate 37 and hold down plate 38 are not even in contact with or united with the diaphragm at all.

Steffes discloses a pump which, as shown in Fig. 1, includes a piston rod 34 connected to a spool 20, with an extension 35 of the piston rod 34 projecting through a central bore of the spool 20. A diaphragm 54 is adhered to a top portion of the spool 20, and a cap 32 is held on top of the diaphragm 54 by a screw 36 extending within the extension 35. However, Steffes does not disclose that the *diaphragm is integrally united with at least a portion of each of the outer surfaces of the enlarged end*, as required by independent claim 5. Rather, Steffes only discloses that the diaphragm is between the cap 32 and the top of the spool 20, and that the lower surface of the diaphragm 54 is adhered to the top surface of the spool 20. Steffes does not disclose that the diaphragm is integrally united with the side surfaces and top surface of the cap 32, or the side and bottom surfaces of the spool 20. Therefore, regardless of whether the cap 32 or the spool 20 of Steffes is interpreted as the enlarged end, Steffes does not disclose that the diaphragm is integrally united with at least a portion of each of the outer surfaces of the enlarged end, because several of the outer surfaces of the cap 32 and the spool 20 are not even in contact with or united with the diaphragm at all.

Holtzberg discloses a composite connecting rod for gasoline and diesel powered engines. However, Holtzberg does not disclose a diaphragm, and therefore does not disclose a diaphragm

integrally united with at least a portion of each of the outer surfaces of the enlarged end, as required by independent claim 5.

Therefore, for the reasons presented above, it is believed apparent that the present invention as recited in new independent claim 5 is not disclosed or suggested by the Bramstedt reference, the Steffes reference and the Holtzberg reference taken either individually or in combination. Accordingly, a person having ordinary skill in the art would clearly not have been motivated to modify the Bramstedt reference in view of the Steffes reference and the Holtzberg in such a manner as to result in or otherwise render obvious the present invention of independent claim 5.

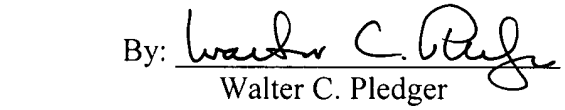
Therefore, it is respectfully submitted that new independent claim 5, as well as claims 6-8 which depend therefrom, are clearly allowable over the prior art of record.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice to that effect is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Takashi NAKAZATO

By: 

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